Government Offices of Sweden
Ministry for Foreign Affairs

CONFIDENCE BUILDING MEASURES

Confidence Building Measure Return for 2019 (covering data for 2018) for the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and their Destruction, 10 April 1972

Sweden

2019

Index

2019 CBM Report of Sweden to the United Nations Office for Disarmament Affairs covering data for 2018

Sweden submits the information specified below.

Annex I: Form "0"

Revised forms for the submission of the Confidence-Building Measures
At the Third Review Conference it was agreed that all States Parties present the following declaration, later amended by the Seventh Review Conference:

Declaration form on Nothing to Declare or Nothing New to Declare for use in the information exchange

Measure	Nothing to declare	Nothing new to declare	Year of last declaration if nothing new to declare
A, part 1			
A, part 2 (i)			
A, part 2 (ii)			
A, part 2 (iii)			
B	X		
C	X		
E		X	
F		X	2014
G		X	2012

Date:

15th of April 2019

State Party to the Convention:

Sweden

Date of ratification/accession to the Convention:

5th of February 1976.

The Convention was signed by Sweden on the 27th of February 1975. It was ratified by Sweden on the 5th of February 1976 and entered into force for Sweden the same date.

National point of contact:

Department for Disarmament and Non-Proliferation, Ministry for Foreign Affairs of Sweden. E-mail: ud-nis@gov.se, Address: SE-103 39 Stockholm, telephone: +46 (0)8-405 10 00

Confidence-Building Measure "A"

Part 1 Exchange of data on research centres and laboratories

At the Third Review Conference it was agreed that States Parties continue to implement the following:

"Exchange of data, including name, location, scope and general description of activities, on research centres and laboratories that meet very high national or international safety standards established for handling, for permitted purposes, biological materials that pose a high individual and community risk or specialize in permitted biological activities directly related to the Convention."

Modalities

The Third Review Conference agreed on the following, later amended by the Seventh Review Conference:

Data should be provided by States Parties on each facility, within their territory or under their jurisdiction or control anywhere, which has any maximum containment laboratories meeting those criteria for such maximum containment laboratories as specified in the latest edition of the WHO[1] Laboratory Biosafety Manual and/or OIE[2] Terrestrial Manual or other equivalent guidelines adopted by relevant international organisations, such as those designated as biosafety level 4 (BL4, BSL4 or P4) or equivalent standards.

States Parties that do not possess a facility meeting criteria for such maximum containment should continue to Form A, part 1 (ii).

Form A, part 1 (i)

Exchange of data on research centres and laboratories[3]

1. Name(s) of facility[4]

High Containment Laboratory, Public Health Agency of Sweden (The Swedish BSL4 laboratory)

2. Responsible public or private organization or company

Public Health Agency of Sweden

3. Location and postal address

Public Health Agency of Sweden, SE-17182 Solna, Sverige

[1] World Health Organization
[2] World Organization for Animal Health
[3] The containment units which are fixed patient treatment modules, integrated with laboratories, should be identified separately.
[4] For facilities with maximum containment units participating in the national biological defence research and development programme, please fill in name of facility and mark "Declared in accordance with Form A, part 2 (iii)".

4. Source(s) of financing of the reported activity, including indication if the activity is wholly or partly financed by the Ministry of Defence

The activities are financed through the Swedish Government (Ministry of Health and Social Affairs), and through governmental agencies such as Swedish Civil Contingencies Agency (MSB), Swedish Research Council (VR) and partly by the EU (research funds and the Innovative Medicines Initiative and funding through Joint Actions within the European Health Program).

5. Number of maximum containment units[5] within the research centre and/or laboratory, with an indication of their respective size (m^2)

Two separate BSL4 units enclosing three laboratories with a total area of 136 m^2.

6. Scope and general description of activities, including type(s) of micro-organisms and/or toxins as appropriate

The Public Health Agency of Sweden is a national expert authority with overall responsibility for public health issues at a national level. Our mission is to promote health, prevent illness and contribute to a sustainable society. There are no projects conducted related to biological defence, more than a strive to a better biological understanding of biological agents (see publication list related to BSL4 work below). The agency develops and maintain national diagnostic preparedness for highly pathogenic agents. Research results is published in international journals.

Risk group 4 agents

In the BSL4 containment units diagnostics and research regarding the following viruses are performed: Bunyavirus, Flavivirus, Arenavirus, Paramyxovirus, Filovirus, SARS-CoV and highly pathogenic avian influenza virus. Special emphasis is directed towards the Crimean-Congo haemorrhagic fever virus (CCHFV) and Ebola virus.

Methods for identification

Standard methods are used for identification of these microorganisms. Methods in use include molecular biological methods (including novel high throughput/high capacity methods), serological methods such as neutralization assays, cultivation/isolation and electron microscopy. The agency also has capacity to culture virus in small rodents. The quality of diagnostic methods for many of the pathogens is assured through participation in quality assurance exercises and ring trials within international EC-funded networks.

The general goals are to improve laboratory diagnostics, laboratory capacity and basic knowledge of highly pathogenic agents. This includes the development of platforms for broad, efficient and reliable diagnostic methods, studies of virulence and pathogenesis and the establishment and use of animal models for use in diagnostics, treatment and vaccine development.

[5] In accordance with the latest edition of the WHO Laboratory Biosafety Manual, or equivalent.

Public Health Agency of Sweden: publications in 2017 related to high containment laboratory activities:

Brucella abortus: determination of survival times and evaluation of methods for detection in several matrices. Kaden R, Ferrari S, Jinnerot T, Lindberg M, Wahab T, Lavander M. BMC Infect Dis. 2018 Jun 5;18(1):259. doi: 10.1186/s12879-018-3134-5.

Development of nineteen Taqman real-time PCR assays for screening and detection of select highly pathogenic bacteria. Boskani T., Edvinsson B. and Wahab T. Infection Ecology & Epidemiology 2018, VOL. 00, 1553462 https://doi.org/10.1080/20008686.2018.1553462.

Phylogeographic analysis reveals multiple international transmission events have driven the global emergence of Escherichia coli O157:H7. Franz E, Rotariu O, Lopes BS, MacRae M, Bono JL, Laing C, Gannon V, Söderlund R, van Hoek AHAM, Friesema I, French NP, George T, Biggs PJ, Jaros P, Rivas M, Chinen I, Campos J, Jernberg C, Gobius K, Mellor GE, Chandry PS, Perez-Reche F, Forbes KJ, Strachan NJC. Clin Infect Dis. 2018 Oct 29.

Shiga Toxin-Producing Escherichia coli Infection in Jönköping County, Sweden: Occurrence and Molecular Characteristics in Correlation With Clinical Symptoms and Duration of stx Shedding. Bai X, Mernelius S, Jernberg C, Einemo IM, Monecke S, Ehricht R, Löfgren S, Matussek A. Front Cell Infect Microbiol. 2018 May 1:8.

Genetic sequencing for surveillance of drug resistance in tuberculosis in highly endemic countries: a multi-country population-based surveillance study. Zignol M, Cabibbe AM, Dean AS, Glaziou P, Alikhanova N, Ama C, Andres S, Barbova A, Borbe-Reyes A, Chin DP, Cirillo DM, Colvin C, Dadu A, Dreyer A, Driesen M, Gilpin C, Hasan R, Hasan Z, Hoffner S, Hussain A, Ismail N, Kamal SMM, Khanzada FM, Kimerling M, Kohl TA, Mansjö M, Miotto P, Mukadi YD, Mvusi L, Niemann S, Omar SV, Rigouts L, Schito M, Sela I, Seyfaddinova M, Skenders G, Skrahina A, Tahseen S, Wells WA, Zhurilo A, Weyer K, Floyd K, Raviglione MC. Lancet Infect Dis. 2018 Jun 18(6):675-683.

The Epidemiological Significance and Temporal Stability of Mycobacterial Interspersed Repetitive Units-Variable Number of Tandem Repeats-Based Method Applied to Mycobacterium tuberculosis in China. Li Y, Hu Y, Mansjö M, Zhao Q, Jiang W, Ghebremichael S, Hoffner S, Xu B. Int J Environ Res Public Health. 2018 Apr 17:15(4).

Distribution of plasma concentrations of first-line anti-TB drugs and individual MICs: a prospective cohort study in a low endemic setting. Niward K, Davies Forsman L, Bruchfeld J, Chryssanthou E, Carlström O, Alomari T, Carlsson B, Pohanka A, Mansjö M, Jonsson J, Nordvall M, Johansson AG, Eliasson E, Werngren J, Paues J, Simonsson USH, Schön T. J Antimicrob Chemother. 2018 Oct 1:73(10):2838-2845.

Plasma concentrations of second-line antituberculosis drugs in relation to minimum inhibitory concentrations in multidrug-resistant tuberculosis patients in China: a study protocol of a prospective observational cohort study. Davies Forsman L, Niward K, Hu Y, Zheng R, Zheng X, Ke R, Cai W, Hong C, Li Y, Gao Y, Werngren J, Paues J, Kuhlin J, Simonsson USH, Eliasson E, Alffenaar JW, Mansjö M, Hoffner S, Xu B, Schön T, Bruchfeld J. BMJ Open. 2018 Oct 4:8(9):e023899.

Trends and differences in tuberculosis incidences and clustering among natives in Denmark, Sweden and Finland: comparison of native incidences and molecular epidemiology among three low-incidence countries. Pedersen MK, Lillebaek T, Andersen

AB, Soini H, Haanperä M, Groenheit R, Jonsson J, Svensson E. Clin Microbiol Infect. 2018 Jul 24(7):717-723.

A cluster of multidrug-resistant Mycobacterium tuberculosis among patients arriving in Europe from the Horn of Africa: a molecular epidemiological study. Walker TM, Merker M, Knoblauch AM, Helbling P, Schoch OD, van der Werf MJ, Kranzer K, Fiebig L, Kröger S, Haas W, Hoffmann H, Indra A, Egli A, Cirillo DM, Robert J, Rogers TR, Groenheit R, Mengshoel AT, Mathys V, Haanperä M, Soolingen DV, Niemann S, Böttger EC, Keller PM; MDR-TB Cluster Consortium. Lancet Infect Dis. 2018 Apr 18(4):431-440.

Screening of migrants for tuberculosis identifies patients with multidrug-resistant tuberculosis but is not sufficient. Helbling P, Kröger S, Haas W, Brusin S, Cirillo DM, Groenheit R, Guthmann JP, Soini H, Hendrickx D, van der Werf MJ. Clin Microbiol Infect. 2018 Aug 24(8):918-919.

Time-and-motion tool for the assessment of working time in tuberculosis laboratories: a multicentre study. Mathys V, Roycroft E, Raftery P, Groenheit R, Folkvardsen DB, Homorodean D, Vasiliauskiene E, Vasiliauskaite L, Kodmon C, van der Werf MJ, Drobniewski F, Nikolayevskyy V. Int J Tuberc Lung Dis. 2018 Apr 1;22(4):444-451.

Cross-border outbreak of extensively drug-resistant tuberculosis linked to a university in Romania. Popovici O, Monk P, Chemtob D, Chiotan D, Freidlin PJ, Groenheit R, Haanperä M, Homorodean D, Mansjö M, Robinson E, Rorman E, Smith G, Soini H, Van Der Werf MJ. Epidemiol Infect. 2018 May 146(7):824-831.

Minimum inhibitory concentrations of fluoroquinolones and pyrazinamide susceptibility correlate to clinical improvement in MDR-TB patients - a nationwide Swedish cohort study over two decades. Davies Forsman L, Jonsson J, Wagrell C, Werngren J, Mansjö M, Wijkander M, Groenheit R, Hammar U, Giske CG, Schön T, Bruchfeld J. Clin Infect Dis. 2018 Dec 18. doi: 10.1093/cid/ciy1068.

Imported leishmaniasis in Sweden 1993-2016. Söbirk SK, Inghammar M, Collin M and Davidsson L. Epidemiology and Infection. 2018. 1-8. https://doi.org/10.1017/S0950268818001309.
The DEVD motif of Crimean-Congo hemorrhagic fever virus nucleoprotein is essential for viral replication in tick cells. Salata C, Monteil V, Karlberg H, Celestino M, Devignot S, Leijon M, Bell-Sakyi L, Bergeron É, Weber F, Mirazimi A. Emerg Microbes Infect. 2018 Nov 28;7(1):190. doi: 10.1038/s41426-018-0192-0.

Overexpression of the nucleocapsid protein of Middle East respiratory syndrome coronavirus up-regulates CXCL10. Aboagye JO, Yew CW, Ng OW, Monteil VM, Mirazimi A, Tan YJ. Biosci Rep. 2018 Oct 17;38(5). pii: BSR20181059. doi: 10.1042/BSR20181059.

The European Virus Archive goes global: A growing resource for research. Romette JL, Prat CM, Gould EA, de Lamballerie X, Charrel R, Coutard B, Fooks AR, Bardsley M, Carroll M, Drosten C, Drexler JF, Günther S, Klempa B, Pinschewer D, Klimkait T, Avsic-Zupanc T, Capobianchi MR, Dicaro A, Ippolito G, Nitsche A, Koopmans M, Reusken C, Gorbalenya A, Raoul H, Bourhy H, Mettenleiter T, Reiche S, Batten C, Sabeta C, Paweska JT, Eropkin M, Zverev V, Hu Z, Mac Cullough S, Mirazimi A, Pradel F, Lieutaud P. Antiviral Res. 2018 Oct;158:127-134. doi: 10.1016/j.antiviral.2018.07.017.

Epitope-mapping of the glycoprotein from Crimean-Congo hemorrhagic fever virus using a microarray approach. Fritzen A, Risinger C, Korukluoglu G, Christova I, Corli Hitzeroth A, Viljoen N, Burt FJ, Mirazimi A, Blixt O. PLoS Negl Trop Dis. 2018 Jul 9;12(7):e0006598. doi: 10.1371/journal.pntd.0006598. eCollection 2018 Jul.

Second International Conference on Crimean-Congo Hemorrhagic Fever. Spengler JR, Bente DA, Bray M, Burt F, Hewson R, Korukluoglu G, Mirazimi A, Weber F, Papa A. Antiviral Res. 2018 Feb;150:137-147. doi: 10.1016/j.antiviral.2017.11.019.

Evaluation of a rapid and sensitive RT-qPCR assay for the detection of Ebola Virus. Biava M, Colavita F, Marzorati A, Russo D, Pirola D, Cocci A, Petrocelli A, Delli Guanti M, Cataldi G, Kamara TA, Kamara AS, Konneh K, Cannas A, Coen S, Quartu S, Meschi S, Valli MB, Mazzarelli A, Venditti C, Grassi G, Rozera G, Castilletti C, Mirazimi A, Capobianchi MR, Ippolito G, Miccio R, Di Caro A. J Virol Methods. 2018 Feb;252:70-74. doi: 10.1016/j.jviromet.2017.11.009..

EBOLA Ag K-SeT rapid test: field evaluation in Sierra Leone. Colavita F, Biava M, Mertens P, Gilleman Q, Borlon C, Delli Guanti M, Petrocelli A, Cataldi G, Kamara AT, Kamara SA, Konneh K, Vincenti D, Castilletti C, Abdurahman S, Mirazimi A, Capobianchi MR, Ippolito G, Miccio R, Di Caro A. Clin Microbiol Infect. 2018 Jun;24(6):653-657. doi: 10.1016/j.cmi.2017.10.019. .

Form A, part 2 (i)

National biological defence research and development programmes Declaration

Are there any national programmes to conduct biological defence research and development within the territory of the State Party, under its jurisdiction or control anywhere? Activities of such programmes would include prophylaxis, studies on pathogenicity and virulence, diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

Yes

If the answer is Yes, complete Form A, part 2 (ii) which will provide a description of each programme.

Form A, part 2 (ii)

National biological defence research and development programmes

Description

1. State the objectives and funding of each programme and summarize the principal research and development activities conducted in the programme. Areas to be addressed shall include: prophylaxis, studies on pathogenicity and virulence,

diagnostic techniques, aerobiology, detection, treatment, toxinology, physical protection, decontamination and other related research.

Methods are developed for detection, identification and analysis of bacteria, viruses and toxins, and for prediction and management of consequences of potential biologic agent release. Field trial capacity for outdoor biological detection is established in order to successfully evaluate B-detection instruments using BW-simulants and occasionally to train military personnel in using biodetection equipment.

More specifically:

Analysis of biological agents and toxins

The R&D activities focus on development of sampling, preparation of mixed CBRN samples, and rapid identification methods for biothreat agents. The analysis methods are based primarily on different types of DNA and RNA methods, and to some extent on immunological methods. In addition, volatile organic compound (VOCs) signatures are under evaluation for rapid identification of bacteria.

Also high-resolution genomic forensic analysis of biothreat pathogenic agents for verification purposes is performed. In this context, statistical frameworks for calculation of evidence values for attribution purposes are developed. The scientific research focuses on understanding the movement of pathogens and associated diseases through a population and geography (epidemiology), and the changes associated with the propagation of pathogens over time (evolution). The toxin analysis research involves development of sensitive methods for toxin preparation and mass spectrometry detection of protein toxins as ricin and Botulinum neurotoxins. In addition, chemical analytical methods for paralytic shellfish toxins are developed, with an emphasis on forensic methods.

These activities are funded by the Ministry of Defence (9.8 MSEK), the Ministry of Foreign Affairs (4.7 MSEK), the Swedish Civil Contingencies Agency (8.6 MSEK), the US Defence Threat Reduction Agency, DTRA (2.0 MSEK), and the European Commission (0.5 MSEK).

Detection of B-agents

Here the objective is to discover the presence of health threatening levels of B substances in the air (Alerting), before they have negative impact on mission effectiveness, and provide timely information which will permit forces to adopt an appropriate level of individual and collective protection (Warning). The need for close to real-time, automatic measurements excludes the requirement for characterisation of the hazard substances.

The research in the area has been focused on Laser Induced Fluorescence spectroscopy (LIF), Laser Induced Breakdown Spectroscopy (LIBS). The combined LIF + LIBS system is used to measure spectral signatures from different biological aerosol (Simili substances) and interferents. Different data extraction/classification algorithms are thereafter evaluated. Test and evaluation facilities are developed in order to continuously evaluate the different steps of the biodetector development and also to be able to evaluate commercial biodetectors.

Together with the Swedish Armed Forces National CBRN Defence Centre, we have access to a specific outdoor facility suitable for large scale field trials. In this facility bioaerosols of simulant agents can be studied under field conditions. However, during 2018, no such biological field trial was performed.

The B-detection activities are mainly funded by the Ministry of Defence (2.0 MSEK).

Environmental fate of potential biological warfare agents

This project investigates the properties of potential biological warfare agents with relevance for persistence in the environment, potential further dispersal and potential maintenance of virulence. Virulence properties are evaluated in cell and animal infection models. The objective is to increase the

understanding of the environmental fate of the organism after, for instance, a deliberate or accidental release of the pathogen in a specific milieu. Such knowledge will in turn provide a basis for related threat and risk assessments for civilian preparedness including decontamination issues.

These activities are funded by the Ministry of Defence (7.0 MSEK), the US Defence Threat Reduction Agency, DTRA (1.2 MSEK), the Swedish Civil Contingencies Agency (3.7 MSEK), and the Ministry of Foreign Affairs (1.1 MSEK).

2. **State the total funding for each programme and its source.**

The funding for each programme is specified under #1.

Total funding:	40.6 MSEK
Ministry of Defence	(18.8 MSEK)
- Swedish Civil Contingencies Agency	(12.3 MSEK)
DTRA	(3.2 MSEK)
Ministry of Foreign Affairs	(5.8 MSEK)
European Commission/EDA	(0.5 MSEK)

3. Are aspects of these programmes conducted under contract with industry, academic institutions, or in other non-defence facilities?

No

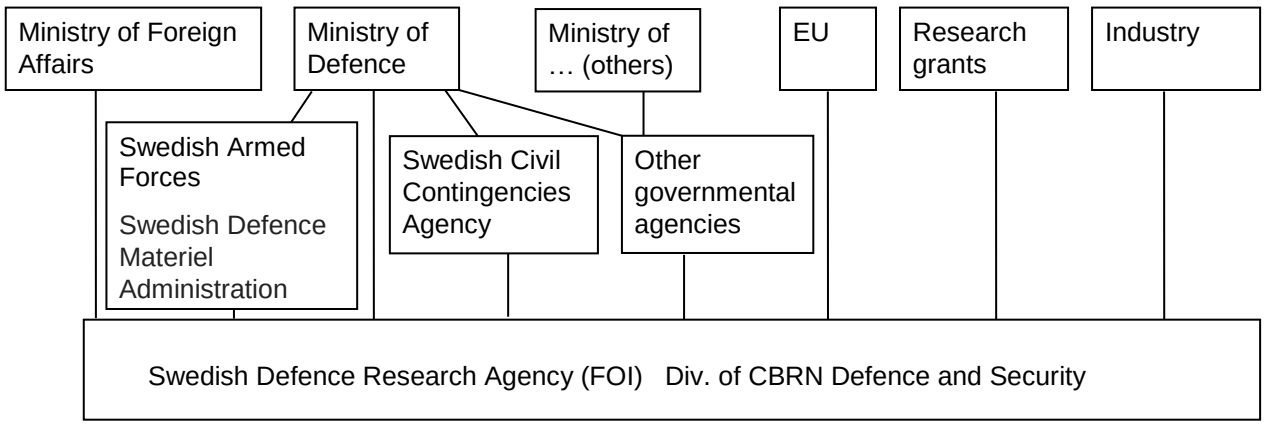
4. If yes, what proportion of the total funds for each programme is expended in these contracted or other facilities?

5. Summarize the objectives and research areas of each programme performed by contractors and in other facilities with the funds identified under paragraph 4.

The objective of the contracted activities is to provide expertise in the research area epidemiology and evolution described under #1.

6. Provide a diagram of the organizational structure of each programme and the reporting relationships (include individual facilities participating in the programme).

Swedish Defence Research Agency (FOI) Div. of CBRN Defence and Security:



7. Provide a declaration in accordance with Form A, part 2 (iii) for each facility, both governmental and non-governmental, which has a substantial proportion of its resources devoted to each national biological defence research and development programme, within the territory of the reporting State, or under its jurisdiction or control anywhere.

Form A, part 2 (iii)

National biological defence research and development programmes

Facility 1: The Swedish Defence Research Agency (FOI)

1. **What is the name of the facility?**

Swedish Defence Research Agency (FOI), Division of CBRN Defence and Security

2. **Where is it located (include both address and geographical location)?**

Cementvägen 20, SE-901 82 UMEÅ, Sweden

3. **Floor area of laboratory areas by containment level:**

BSL2 515 (sqM)

BSL3 74 (sqM)

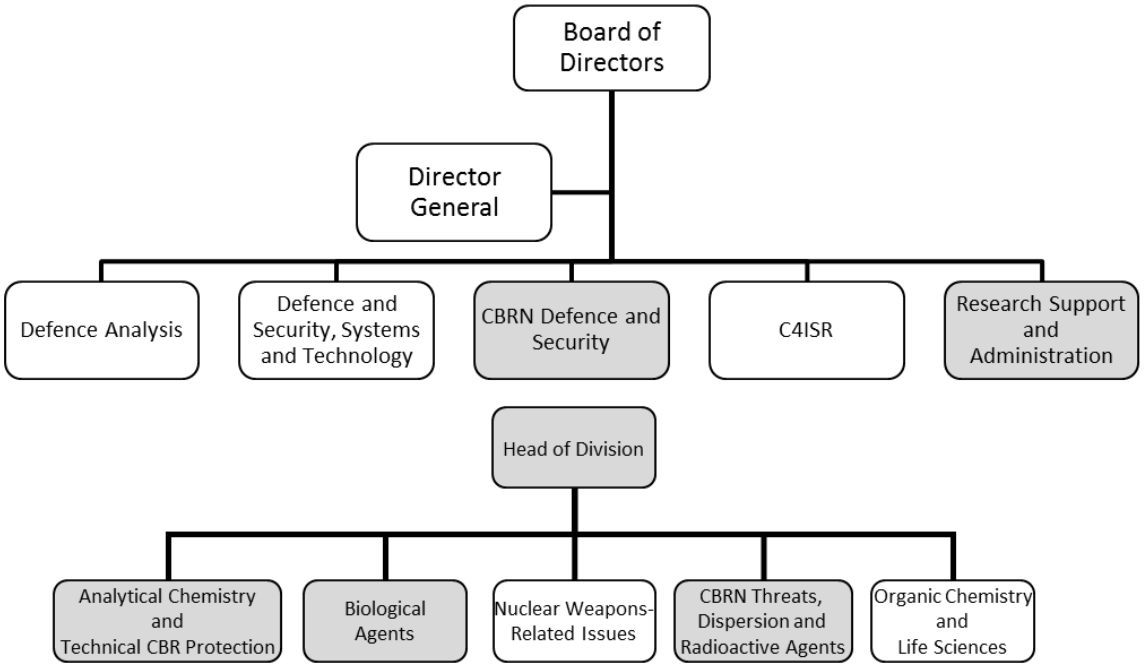
BSL4 0 (sqM)

Total laboratory floor area 589 (sqM)

4. The organizational structure of each facility.

Organisational Structure of FOI

(Departments contributing to the Biological Defence Programme are shown in grey)



https://foi.se/en/about-foi/organization.html

(i)	Total number of personnel	34
(ii)	Division of personnel:	
	Military	0
	Civilian	34
(iii)	Division of (permanent) personnel by category:	
	Scientists	23
	Engineers	7
	Technicians	2
	Administrative and support staff	2

(iv) **List the scientific disciplines represented in the scientific/engineering staff.**

Physics, analytical chemistry, chemistry, biophysical chemistry, bacteriology, virology, genetics, immunology, medicine, microbiology, biochemistry, molecular biology, ecology, forensic science, bioinformatics, toxicology, veterinary medicine, and mathematics.

(v) **Are contractor staff working in the facility? If so, provide an approximate number**.

Yes, a limited number of contractor staff carries out building and maintenance work.

(vi) **What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?**

FOI CBRN Defence and Security receives funding from the Ministry of Defence, the Swedish Defence Materiel Administration, the Swedish Civil Contingencies Agency, the Ministry of Foreign Affairs, the European Union, research grants and from commercial companies.

(vii) **What are the funding levels for the following programme areas:**

Research	40%
Development	40%
Test and evaluation	20%

(viii) **Briefly describe the publication policy of the facility:**

The recommendation for publication at the Swedish Defence Research Agency, is to publish results of biological research in international peer review journals. Some results are published as publicly available FOI-reports. Reprints of scientific papers and FOI-reports can be requested from: Swedish Defence Research Agency, SE-901 82 Umeå, Sweden.

(ix) **Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)**

Quantification and kinetics of viral RNA transcripts produced in Orthohantavirus infected cells; Jonas Näslund, Göran Bucht, Julia Wigren Byström, Fredrik Trulsson, Magnus Evander, Olivia Wesula Lwande, Clas Ahlm; Virology Journal, vol 15, nummer 18, 2018; FOI-S--5823—SE

Validation guidelines for PCR workflows in bioterrorism preparedness, food safety and forensics; Emelie Näslund Salomonsson, Johannes Hedström, Moa Lavander, Tomas Jinnerot, Lina Boiso, Bertil Magnusson och Peter Rådström; Accreditation and Quality Assurance, Springer Link, vol DOI, https://doi.org/10.1007/s00769-018-1319-7(012, 2018; FOI-S--5947—SE

Accounting for bacterial overlap between raw water communities and contaminating sources improves the accuracy of signature-based microbial source tracking; Stina Bäckman, Anna Macellaro, Petter Lindgren, Per Stenberg, Andreas Sjödin, Mats Forsman, Jon Ahlinder, Moa Hägglund, Emmy Borgmästars, Karin Jacobsson, Rikard Dryselius; Frontiers in Microbiology, vol 9, nummer 2364, oktober 2018; FOI-S--5967—SE

Predators and nutrient availability favor protozoa-resisting bacteria in aquatic system
Agneta Andersson, Jon Ahlinder, Peter Mathisen, Moa Hägglund, Stina Bäckman, Elin Nilsson, Andreas Sjödin, Johanna Thelaus. Scientific reports 8 (1). 8415, 2018. https://doi.org/10.1038/s41598-018-26422-4

A New Species of the the y-Proteobacterium *Francisella, F. adeliensis* Sp. Nov., Endocytobiont in an Antarctic Marine Ciliate and Potential Evolutionary Forerunner of Pathogenic Species; Andreas Sjödin, Johanna Thelaus, Caroline Öhrman, Elin Nilsson, Adriana Vallesi, Dezemona Petrelli, Pierangelo Luporini, Anna Rita Taddei, Graziano Di Giuseppe, Gabriel Gutiérrez, Eduardo Villalobo; Microbial Ecology, 2018; FOI-S--5997—SE

Galleria mellonella Reveals Niche Differences Between Highly Pathogenic and Closely Related Strains of *Francisella* spp. Johanna Thelaus, Eva Lundmark, Petter Lindgren, Andreas Sjödin and Mats Forsman. Frontiers in Cellular and Infection Microbiology 8. 188, 2018

Administration of ferroussulfate drops has significant effects on the gut microbiota ofiron-sufficient infants: arandomised controlled study; Andreas Sjödin, Kotryna Simonyté Sjödin, Magnus Domellöf, Carina Lagerqvist, Olle Hernell, Bo Lönnerdal,Ewa A Szymlek-Gay, Christina E West,Torbjörn Lind; Gut Month, 2018; FOI-S--5998—SE

Microbial community response to growing season and plant nutrient optimisation in a boreal Norway spruce forest; Julia C Haas, Nathanael R Street, Andreas Sjödin, Natuschka M Lee, Mona N Högberg, Torgny Näsholm, Vaughan Hurry; Soil Biology and Biochemistry, vol 125, 2018; FOI-S--5999—SE

Biaconda sustainable and comprehensive software distribution for the life sciences; Andreas Sjödin, Björn Grüning, Ryan Dale, Brad A Chapman,Jillian Rowe, Christopher H Tomkins-Tinch,Renan Valieris, Johannes Köster, The Bioconda Team; Nature Methods, vol 15, 2018; FOI-S--6001—SE

Temporal and long-term gut microbiota variation in allergic disease A prospective study from infancy to school age; Andreas Sjödin, Simonyté Sjödin, Hammarström ML, Rydén, Hernell O, Engstrand L, West CE; Experimental Allergy and Immunology, 2018; FOI-S--6002—SE

Reassessing the Role of Type II Toxin-Antitoxin Systems in Formation of *Escherichia coli* Type II Persister Cells; Sjödin A, Goormaghtigh F, Fraikin N, Putrinš M, Hallaert T, Hauryliuk V, Garcia-Pino A, Kasvandik S, Udekwu K, Tenson T, Kaldalu N, Van Melderen L; mBio, vol 9, nummer 3, juni 2018; FOI-S--6003—SE

Experimental Infection and Transmission Competence of Sindbis Virus in Culex torrentium and Culex pipiens Mosquitoes from Northern Sweden; Näslund J, Lundmark E, Bucht G, Wesula Lwande O, Ahlm K, Ahlm C, Evander M; Vector-Borne and Zoonotic Diseases, 2018; FOI-S--6006—SE

Accounting for Bacterial Overlap Between Raw Water Communities and Contaminating Sources Improves the Accuracy of Signature-Based Microbial Source Tracking; M Hägglund, S Bäckman, P Lindgren, P Stenberg, A Sjödin, M Forsman, J Ahlinder, E Borgmästars, K Jacobsson, R Dryselius,; Frontiers in Microbiology, vol 9, 2018; FOI-S--6009—SE

Phylogeographic distribution of human and hare *Francisella tularensis* subsp. *holarctica* strains in the Netherlands and its pathology in European brown hares (Lepus europaeus); Myrtennäs K, Granberg M, Forsman M, Koene M, Rijks J, Maas M, Ruuls R, Engelsma M, van Tulden P, Kik M, Jzer J, Notermans D, de Vries M, Fanoi E, Pijnacker R, Spierenburg M, Bavelaar H, Berkhout H, Sankatsing S, Diepersloot R, Roest HJ Gröne A; Frontiers in Microbiology, vol 12, 2018; FOI-S--6010--SE

5. Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms[6] and/or toxins studied, as well as outdoor studies of biological aerosols.

FOI CBRN Defence and Security provides expert knowledge of biological and toxic agents which is highly relevant to the performance of the Swedish Armed Forces (SAF), the Ministry for Foreign Affairs and to the civilian community. The division pursues development of rapid molecular identification tools for the Swedish Armed Forces and civil preparedness agencies. Related to this is also operational routines for the analysis of samples with mixed or unknown content of CBRN substances on commission of different branches of the Swedish police force. The division also provides high-resolution genomic forensic analysis of biothreat agents, for verification purposes, and maintains reference collections of biothreat agents and related strains and species, investigates the ecology, epidemiology and evolution of model pathogens. On occasion evaluation of novel therapeutics on behalf of external customers is performed. Other activities include detection of B-agents in order to discover the presence of health threatening levels of B substances, before they have negative impact on mission effectiveness and provide timely information which will permit forces to adopt an appropriate level of individual and collective protection. The institute is also building and maintaining competence in the area of biological risk and threat assessments for civilian preparedness.

[6] Including viruses and prions.

Facility 2:

1. What is the name of the facility?

National Veterinary Institute (SVA)

2. Where is it located (include both address and geographical location)?

Ulls väg 2B, SE-751 89, UPPSALA, Sweden

3. Floor area of laboratory areas by containment level:

BL2	approx: 10. 000 (sqM)
BL3	approx: 457 (sqM). Summary of the different BL3 lab 1 and 2: 218 (sqM), BL3 lab 4 72 (sqM), High inf. Lab: 58,3 (sqM), EHEC lab: 36,6 (sqM), TSE-lab 72 (sqM). A glovebox is also installed in one of the BL3 labs.
Total laboratory floor area	10 457 (sqM)

4. The organizational structure of each facility.

(i) Total number of personnel	352
(ii) Division of personnel:	
Military	0
Civilian	352
(iii) Division of personnel (permanent) by category:	
Scientists	53
Engineers	85 (veterinarians)
Technicians	77
Administrative and support staff	137

(iv) List the scientific disciplines represented in the scientific/engineering staff.

Bacteriology, Epidemiology, Feed, Immunobiology, Parasitology, Pathology, Pharmacology, Statistics, Toxicology, and Virology.

All within the veterinary medicine area.

(v) Are contractor staff working in the facility? If so, provide an approximate number.

No

(vi) What is (are) the source(s) of funding for the work conducted in the facility, including indication if activity is wholly or partly financed by the Ministry of Defence?

Mainly the Swedish Civil Contingencies Agency. However, since 2015 SVA has had a new mission concerning planning for civil defence. SVA has had partial funding from Ministry of Enterprise and Innovation. SVA obtained 16.7 million SEK for 2018 from the Swedish Civil Contingencies Agency for crisis management applications and 22 million SEK for 2018 from the Ministry of Enterprise and Innovation for civil defence applications.

(vii) What are the funding levels for the following programme areas:

Research & Development 63.9 million SEK

Test and evaluation

(viii) Briefly describe the publication policy of the facility:

Policies and press releases are coordinated by the department of communication. Submitting scientific publications or accepting invitations to give oral presentations in case there is a security concern are discussed internally.

(ix) Provide a list of publicly-available papers and reports resulting from the work published during the previous 12 months. (To include authors, titles and full references.)

The latest scientific publications from SVA can be found at:

http://www.sva.se/forskning-och-utveckling/vetenskapliga-publikationer

4. Briefly describe the biological defence work carried out at the facility, including type(s) of micro-organisms[7] and/or toxins studied, as well as outdoor studies of biological aerosols.

On-going biological research projects at SVA during 2018 can be found at:

http://www.sva.se/en/Research/Researches/

The Swedish Forum for Biopreparedness Diagnostics (FBD) performed during 2018 a pilot study and a civil-military exercise. FBD consists of four agencies; The Public Health Agency of Sweden, the National Food Agency, the Swedish Defence Research Agency and the National Veterinary Institute (SVA). These organization made the pilot study and the exercise together with the Swedish Armed Forces.

[7] Including viruses and prions.

Confidence-Building Measure "B"

Exchange of information on outbreaks of infectious diseases and similar occurrences caused by toxins

Nothing to declare

The Public Health Agency does not have any deviating outbreaks to report during 2018.

Swedish Board of Agriculture has not noted any outbreaks concerning infectious animal deceases or similar occurrences caused by toxins, which deviates from the normal pattern.

Confidence-Building Measure "C"

Nothing to declare

Confidence-Building Measure "E"

Nothing new to declare

Declaration of legislation, regulations and other measures

Relating to	Legislation	Regulations	Other measures[8]	Amended since last year
(a) Development, production stockpiling, acquisition or retention of microbial or other biological agents, or toxins, weapons, equipment and means of delivery specified in Article I	Yes	Yes	Yes	No
(b) Exports of micro-organisms[9] and toxins	Yes	Yes	Yes	No
(c) Imports of micro-organisms[11] and toxins	Yes	Yes	Yes	No
(d) Biosafety[10] and biosecurity[11]	Yes	Yes	Yes	No

In general, Sweden adapts to legislation and regulation established by EU.

[8] Including guidelines.
[9] Micro-organisms pathogenic to man, animals and plants in accordance with the Convention.
[10] In accordance with the latest version of the WHO Laboratory Biosafety Manual or equivalent national or international guidance.
[11] In accordance with the latest version of the WHO Laboratory Biosecurity Guidance or equivalent national or international guidance.

Confidence-Building Measure "F"

Declaration of past activities in offensive and/or defensive biological research and development programmes

Nothing new to declare

Form F

Declaration of past activities in offensive and/or defensive biological research and development programmes

1. Date of entry into force of the Convention for the State Party.

The Convention was signed by Sweden on the 27 February 1975. It was ratified by Sweden on the 5 February 1976 and entered into force for Sweden the same date. The text of the Convention is published in the Swedish Treaty Series, SÖ 1976:18.

2. Past offensive biological research and development programmes:

No

3. Past defensive biological research and development programmes:

Yes

Period(s) of activities:

1960 to present

Confidence-Building Measure "G"

Declaration of vaccine production facilities

Form G

Declaration of vaccine production facilities

1. Name of facility:

Valneva Sweden AB

2. Location (mailing address):

SE-105 21 Stockholm, Sweden

3. General description of the types of diseases covered:

Diarrhoea, ETEC/Cholerae and polio, inactivated Sabine polio virus strains (Type 1, Type 2, Type 3), attenuated viral vectors based on Lymphocytic Choriomeningitis virus (LCMV) and Pichinde.